Bibliographic data: CN 1272981 (A)

Method and device for reserving resources one or more multiple access communication channels

Publication date:	2000-11-08
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Classification:	**- international:** *H04H20/42; H04J1/12; H04J3/16; H04J4/00; H04J99/00; H04L12/28; H04L12/56; H04N7/173; H04H20/76;* (IPC1-7): H04B1/56; H04J15/00; H04J3/02; H04L5/14; H04Q11/04
	- European: H04H20/42; H04J1/12; H04J3/16D; H04J4/00; H04L12/28B; H04L12/56B; H04N7/173B
Application number:	CN19988006067 19980413
Priority number(s):	US19970843033 19970411
Also published as:	• CN 1120580 (C) • WO 9847236 (A1) • US 5963557 (A) • US 6370153 (B1) • EP 0985275 (A1) • more

Abstract not available for CN 1272981 (A)
Abstract of corresponding document: WO 9847236 (A1)

A method and system are disclosed for enabling point-to-point and multicast communication in a multiple access network using three types of communication channels, namely one or more upstream payload channels (f2), one or more upstream control channels (f3) and one or more downstream channels (f1). Each channel (f1, f2, f3) illustratively is divided into slots or mini-slots. Each upstream payload channel (f2) is assigned for carrying upstream directed payload bitstreams from stations (150) to a central controller (112). The central controller (112) has an independent receiver (254, 255) for each upstream channel (f2, f3) for simultaneous reception of control and payload bitstreams. Each station (150) has at least one frequency agile programmable transmitter (390), or separate upstream control and payload channel transmitters (178, 184), respectively, for simultaneous transmission of control and payload bitstreams. Each upstream control channel (f3) is assigned for carrying upstream directed control bitstreams, such as reservation request bitstreams requesting reservation of time slots of the upstream payload channel (f2), from the stations (150) to the central controller (112). At least one downstream channel (f1) is assigned for carrying at least downstream directed control bitstreams, such as bitstreams containing network configuration acknowledgements, collision, status of reservation request, and also containing indications of assigned slots in the upstream payload channel (f2), from the central controller (112) to the stations (150). The downstream channel (f1) may also illustratively carry payload bitstreams.